GOVERNMENT OF INDIA
SCIENCE AND TECHNOLOGY
LOK SABHA

STARRED QUESTION NO:50
ANSWERED ON:20.07.2016
Centres of Excellence in Nanotechnology
Simha Shri Prathap

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) the details of Centres of Excellence in Nanotechnology in various States of the country, location-wise;

(b) the budgetary allocation made for such centres to undertake research and development works during each of the last three years and the current year, year-wise;

(c) the areas in which these centres have achieved scientific excellence of international repute so far; and

(d) the steps taken by the Government to develop more such centres /institutes and give impetus to nanotechnology?

Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES
(DR. HARSH VARDHAN)

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(bÃ‰. cÂÃ‰Ã‡ Â´Ã‰vÃ‰Ã‡xÃ‰)

(a) to (d): A statement is laid on the Table of the House.

STATEMENT AS REFERRED TO IN REPLY TO PARTS (a) TO (d) OF LOK SABHA STARRED QUESTION NO.50 FOR 20/7/2016 REGARDING CENTRES OF EXCELLANCE IN NANOTECHNOLOGY

(a) to (c): Yes, Madam. The Union Government has developed 20 Centres of Excellence in Nanotechnology in various States of country. In addition, 12 Units on Nano Science and 8 Centres of Nanotechnology were also funded earlier. The details of these Centres of Excellence, budgetary allocation made during last three years and in the current year, and also their areas of excellence institution-wise are given in the Annexure.
(d) The Government has been supporting such Centres of Excellence in Indian institutions. A budget of about Rs. 100 crore is earmarked this year to provide research grants to a large number of institutes in the country, which also include the Institute of Nano Science and Technology- Mohali (INST-Mohali), Centre for Nano and Soft Matter Sciences- Bengaluru (CeNS) for implementing research and technology development projects, thematic centres of excellence and organization of national and international conferences/workshops to give impetus to nanoscience and technology.

ANNEXURE
Details of the Centres of Excellence, budgetary allocation made during last three years and the current year and their areas of excellence.
Sr No Location of Centre of Excellence Budget allocation/ fund releases year-wise
(Rs. in lakh) Area of Scientific Excellence
2013-14 2014-15 2015-16 2016-17
(1) (2) (3) (4) (5) (6) (7)
1. Institute of Nano Science and Technology, Habitat Centre, Phase-10, Sector-64, Mohali-160 062 (Punjab), an Autonomous Institute of Department of Science and Technology
450.00 644.80 1000.00 549.96
Materials and devices for energy storage and harvesting, water purification and carbon dioxide sequestration, microfluidics based devices, device and thin film-superstructure, bio-sensors, online diagnostics, bionanomaterials, nano medicine and therapeutics, nanotechnology in agriculture and nano toxicology.
2. Centre for Nano and Soft Matter Sciences (CeNS), Jalahalli, Bengaluru 560 013 (Karnataka), an Autonomous Institute of Department of Science and Technology
560.00 511.67 800.00 435.56
To realize a comprehensive picture of materials in the areas of carbon nano materials and liquid crystal based hybrid materials.
3. Thematic Unit of Excellence at the Indian Institute of Science, Bangalore. (Karnataka) 0.00 100.00 380.40 There is no specific centre wise allocation. Funds release during FY 2016-17 is dependent on progress of the project assigned to each institute. Physics and Technology of Nano Assemblies
4. Thematic Unit of Excellence at the Amrita Institute of Medical Sciences & Research Centre, Kochi (Kerala) 633.36 0.00 246.00 Tissue Engineering and Medical Bio-Nanotechnology
5. Thematic Unit of Excellence at the Indian Institute of Technology, Kanpur (Uttar Pradesh) 289.65 0.00 50.00 Soft Nanofabrication

with applications in Energy, Environment and Bioplatforms
6. Thematic Unit of Excellence at the S.N. Bose National Centre for Basic Sciences, Kolkata (West Bengal) 285.00 0.00 90.00 Nano Device Technology
7. Thematic Unit of Excellence at the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad (Telangana)
295.00 80.00 80.00 Nanomaterial-based Technologies for Automotive Applications
8. Thematic Unit of Excellence at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore
(Karnataka) 0.00 538.00 50.00 Computational Materials Science
9. Thematic Unit of Excellence at the Indian Institute of Technology-Madras. (Tamil Nadu)
150.00 35.00 100.00 Water purification using nanotechnology
10. Thematic Unit of Excellence at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore (Karnataka) 0.00 480.00 0.00 Nanochemistry
11. 'Thematic Unit of Excellence' at the Indian Institute of Science, Bangalore. (Karnataka) 0.00 0.00 0.00 Computational Materials Science

(1) (2) (3) (4) (5) (6) (7)
12. Thematic Unit of Excellence at the S.N. Bose National Centre for Basic Sciences, Kolkata (West Bengal) 440.00 0.00 0.00 Computational Materials Science
13. Centres of Excellence in Nanoelectronics- Phase II at IISc Bangalore 1400.96 863.94 1628 919.00 Nanoelectronics
14. Centres of Excellence in Nanoelectronics- Phase II at IIT Bombay 1035 1145 1486 1165.00
Nanoelectronics
15. Nano Fabrication Prototyping Facility for SMEs and Start-ups in the area of MEMS & NEMS at IIT Bombay 2057 0.00 0.00 328.00 Nano sensors for Agricultural and different appications
16. Research Initiative on Non-Silicon based Technologies for Nanofabrication and Nanoscale Devices at IIT Delhi Funds carried forward from the last release of Rs 2139.12 lakh 1780.87 370.70 430.00
Non-Silicon based Technologies for Nanofabrication and Nanoscale Devices

17. Generic Development of Nanometrology for Nanotechnology at National Physical Laboratory, New Delhi Funds carried forward from the last release of Rs740.41 lakh Project Completed
in December 2014 - - Generic Development of Nanometrology for Nanotechnology

18. Centre for Nano-Electromechanical Systems (NEMS) and Nanophotonics at IIT Madras 40.00 377.40 195.50 126.70 Nano-electromechanical Systems (NEMS), Nanophotonics and Biosensors
19. Development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility for high performance RF/Microwave compound semiconductor heterostructure nano-devices on silicon at IIT Kharagpur 500.00 0.00 0.00 Project Completed in March 2016 High performance RF/ Microwave compound semiconductor hetero- structure nano-devices on silicon
20. Centre for Excellence in Research and Development of Nanoelectronic Theranostic Devices at IIT Guwahati 10.00 2324.00 1370.00 776.66 Development of Nanoelectronics Theranostic Devices

Details of the Units on Nano Science and their areas of specialization
Sr No Location of Unit on Nano Science Area of specialization
(1) (2) (3)
1. Unit on Nano Science at the Banaras Hindu University, Varanasi, Uttar Pradesh Synthesis growth characterization and application of nanostructures
2. Unit on Nano Science at Indian Institute of Science, Bangalore, Karnataka Nanoscale Hybrid Assemblies: An Integrated Approach to Probing Nanoscale Phenomena

(1) (2) (3)
3. Unit on Nano Science at Indian Institute of Technology-Madras, Chennai, Tamil Nadu New materials, sensors, Nanoparticle chemistry, Quantum clusters, etc.
4. Unit on Nano Science at the Indian Institute of Technology − Delhi. Synthesis of nanostructures for optical, electronic, dielectric and magnetic applications
5. Unit on Nano Science at Indian Institute of Technology, Kanpur, Uttar Pradesh Mesoscale structures, patterning and properties
6. Unit on Nano Science at Indian Association for the Cultivation of Science, Kolkata, West Bengal molecular and nanoscale materials
7. Nano Science Unit at Indian Institute of Science Education & Research − Pune, Maharashtra Semiconductor quantum dots, metal nanoparticles, core shell particles, nanowires, polymer composites, porous materials,
8. Unit on Nano Science at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, Karnataka New nanomaterials, new methods for synthesis,
functionalization of graphene, effects of doping
9. Unit on Nano Science & Technology (UNANST-DST) in National Chemical Laboratory, Pune, Maharashtra Nanoparticle synthesis, Biological synthesis of nanoparticles, Nanoparticle-mediated drug delivery
10. Unit on Nano Science & Technology (UNANST-DST) in S.N. Bose National Centre for Basic Sciences, Kolkata. Experimental, computational and theoretical investigations on physical and chemical properties of nanomaterials and complex bio-molecules
11. Unit on Nano Science & Technology (UNANST-DST) at Saha Institute of Nuclear Physics, Kolkata Epitaxial growth ,magnetic nanostructures, etc

12. Unit on Nano Science & Technology (UNANST - DST) at University of Poona, Pune. Semiconductor nanocrystals and develop the lithographic patterns of nanocrystals
Details of the Centres of Nanotechnology and their areas of specialization

Sr No Location of Centre of Nanotechnology Area of specialization

1. Centre for Nanotechnology at Amrita Institute of Medical Sciences, Kochi. Implants, Tissue Engineering, Stem Cell Research
2. Centre for Nanotechnology at Indian Institute of Science, Bangalore- 560 012 (Karnataka). Nanodevices, Nanocomposites, Nano-biosciences
3. Centre for Nanotechnology at Indian Institute of Technology-Bombay, Powai, Mumbai- 400 076 (Maharashtra). Nanoelectonics, Nanomaterials, Nano-biotechnology
4. Centre for Nanotechnology at IIT-Kanpur, Kanpur, Uttar Pradesh Printable electronics, nano patterning
5. Centre for Nanotechnology for at Indian Association for Cultivation of Science. Kolkata, West Bengal. Photovoltaics & Sensor Devices
6. Centre for Nanotechnology at the Jawaharlal Nehru Centre for advanced Scientific Research, Bangalore. Computational Materials Science
7. Centre for Nano Technology at National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore. Nano Scale Phenomena in Biological Systems and Materials
8. Centre for Nano Technology at S.N.Bose National Centre for Basic Sciences, Kolkata. Nano-Electro-Mechanical Systems (NEMS) & Micro-Electro-Mechanical Systems (MEMS)

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